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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/758,113	01/04/2001	Joseph A. Bailey	5500-65500	7908

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EXAMINER

BUTLER, DENNIS

ART UNIT

PAPER NUMBER

2115

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Please find below and/or attached an Office communication concerning this application or proceeding.

PM

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/758,113	BAILEY ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Dennis M. Butler	2115	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 04 January 2001.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-24 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-24 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 04 January 2001 is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____ .  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>2</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____ .                                  |

1. This action is in response to the application filed on January 4, 2001. Claims 1-24 are pending.

2. The disclosure is objected to because of the following informalities: The disclosure uses element numbers and/or figure numbers that do not correspond to the drawings. See the following locations of the specification:

- A) page 10, line 16;
- B) page 10, line 21;
- C) page 10, line 27;
- D) page 11, line 12;
- E) page 11, line 14;
- F) page 11, line 18.

Appropriate correction is required.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the indicator in each of said plurality of storage locations that indicates whether a corresponding work queue element has been completed must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Claims 1-16 and 23-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1 and 9, the phrase "said selected storage location" lacks proper antecedent basis. The claim language would be improved if the phrase were changed to said selected one of said plurality of storage locations.

Claims 2-8 and 10-16 are rejected because they incorporate the deficiencies of claim 1 and 9.

Regarding claims 23 and 24, the phrase "said one or more processors" lacks proper antecedent basis.

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 1-24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification does not describe each of a plurality of said plurality of storage locations including an indicator indicating whether a corresponding work queue element has been completed as recited in claims 1 and 9 and providing an indicator in each of said plurality of storage locations to indicate that a

corresponding work queue element has been completed in response to completion of a task associated with said corresponding work queue element as recited in claim 17. In addition, the specification does not describe that the hardware adapter causes said indicator in the plurality of storage locations to indicate that the corresponding work queue element has been completed as recited in claims 1 and 9. The specification describes that a separate queue called a completion queue (not shown) is used to hold a list of work queue elements that have completed and an indication may be presented to both the hardware adapter and the software driver at page 8, lines 2-4. Therefore, the specification describes that the completion indicator is in the completion queue. In addition, figure 3B shows a queue pair implemented in a group of memory locations. The figure and the corresponding description on page 9 do not disclose a completion indicator as claimed. There are no fields labeled as a completion indicator and there is no description of the hardware adapter causing said indicator in the plurality of storage locations to indicate that the corresponding work queue element has been completed as recited in the claims. Therefore, the language recited in the claims does not correspond to the disclosure and drawings and the specification does not describe the above recited claim elements.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 17, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Regnier et al., U. S. Patent 6,647,423 in view of McAlpine et al., U.S. Patent 6,070,219.

Per claim 17:

- A) Regnier et al teach the following claimed items:
  - 1. a plurality of work queue elements in a queue pair (Send and Receive Queue pairs 300 and 302) including a plurality of storage locations with figures 3 and 4, at column 2, lines 45-50 and at column 3, lines 7-19;
  - 2. selecting one of said plurality of storage locations and servicing a corresponding one of said plurality of work queue elements with figure 4 and at column 3, lines 10-12 and 23-50;
  - 3. storing a new work queue in a selected storage location in response to detecting that an indicator indicates that a corresponding work queue element has been completed with figures 3 and 4 and at column 3, lines 12-37.

B) The claims seem to differ from Regnier et al in that Regnier et al fails to explicitly teach providing an indicator in each of said plurality of storage locations to indicate that a corresponding work queue element has been completed in response to completion of a task associated with said corresponding work queue element as claimed.

C) However, Regnier describes providing an indicator for each of said plurality of storage locations to indicate that a corresponding work queue element has been completed in response to completion of a task associated with said corresponding work queue element with the completion indicator provided in the completion queue CQ 206 of figure 4 and at column 3, lines 29-37. Therefore, Regnier discloses the claimed invention except for explicitly reciting that the indicator is in each of said plurality of storage locations as claimed. McAlpine teaches that it is known to provide an indicator in each of said plurality of storage locations to indicate that a corresponding work queue element has been completed in response to completion of a task associated with said corresponding work queue element at with figure 2, at column 4, lines 36-45 and 58-60 and at column 5, lines 9-20. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide an indicator in each of said plurality of storage locations to indicate that a corresponding work queue element has been completed in response to completion of a task associated with said corresponding work queue element, as taught by McAlpine, in order to provide a completion status indication in each work queue element for

synchronization and management of storage locations of a virtual interface system. One of ordinary skill in the art would have been motivated to combine Regnier and McAlpine because of Regnier's suggestion that completion information allows a consumer to synchronize on a completion without an interrupt and without a kernel transition at column 3, lines 34-37. It would have been obvious for one of ordinary skill in the art to combine Regnier and McAlpine because they are both directed to the problem of providing a virtual interface comprising work queue pairs including creating work queue pairs in storage locations and managing the storage locations.

Per claims 23 and 24:

Regnier describes that Kernel Agent 402 performs setup and resource management functions needed to maintain the virtual interface (VI) including management of VI system memory, creation/destruction of VIs and connection setup and tear down at column 3, lines 12-19. Therefore, Kernel Agent 402 clearly allocates storage locations for a plurality of queue pairs as claimed.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis M. Butler whose telephone number is 703-305-9663. The fax phone number for the organization where this application or proceeding is assigned is 703-746-7239.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

*Dennis M. Butler*

Dennis M. Butler  
Primary Examiner  
Art Unit 2185